

2022 Vermont Mosquito Surveillance Report

Vermont Agency of Agriculture, Food & Markets

The Vermont Agency of Agriculture, Food & Markets conducted its annual statewide surveillance of mosquitoes from July 4 through October 14, 2022 (15 weeks), tracking West Nile Virus (WNV) and Eastern Equine Encephalitis (EEE) presence in the state. Mosquitoes were collected from 111 permanent trap locations in 91 towns within all of Vermont's 14 counties.

Three types of traps were used: resting box traps (RBTs), reduced CDC light traps (CDCs), and gravid traps (GVTs). RBTs target the main mosquito vector (transmitter) of EEE. CDC traps are co-located with RBTs at wetland locations and are used to assess mosquito species and abundance in an area. GVTs are set at wastewater treatment facilities, targeting the main vector for WNV. Collections were made weekly and processed at the Vermont Agricultural and Environmental Laboratory (VAEL) in Randolph Center. The specimens were identified to species, and known or suspected primary and secondary vector species were pooled into vials of 1 to 50 mosquitoes. The mosquito pool samples were processed at the Vermont Department of Health Laboratory for arbovirus testing.

In addition to routine WNV and EEE surveillance, surveillance for the Asian Tiger Mosquito (*Aedes albopictus*), the mosquito species known to vector dengue, chikungunya, and yellow fever and suspected to be a weak vector species for Zika virus in areas of endemic presence, was conducted at 18 sites throughout southern Vermont. Two BG-Sentinel trap locations and 16 oviposition trap locations were surveyed for 15 and 10 weeks, respectively.

2022 At-A-Glance Vermont Mosquito Arbovirus Data

- 63,056 mosquitoes collected
- 2,175 mosquito pools submitted for testing
- 7 mosquito pools were positive for WNV
- 0 mosquito pools were positive for EEE

Vermont Agency of Agriculture's Mosquito Surveillance Results and Trap Locations (RBT, CDC, and GVT Traps), 2022

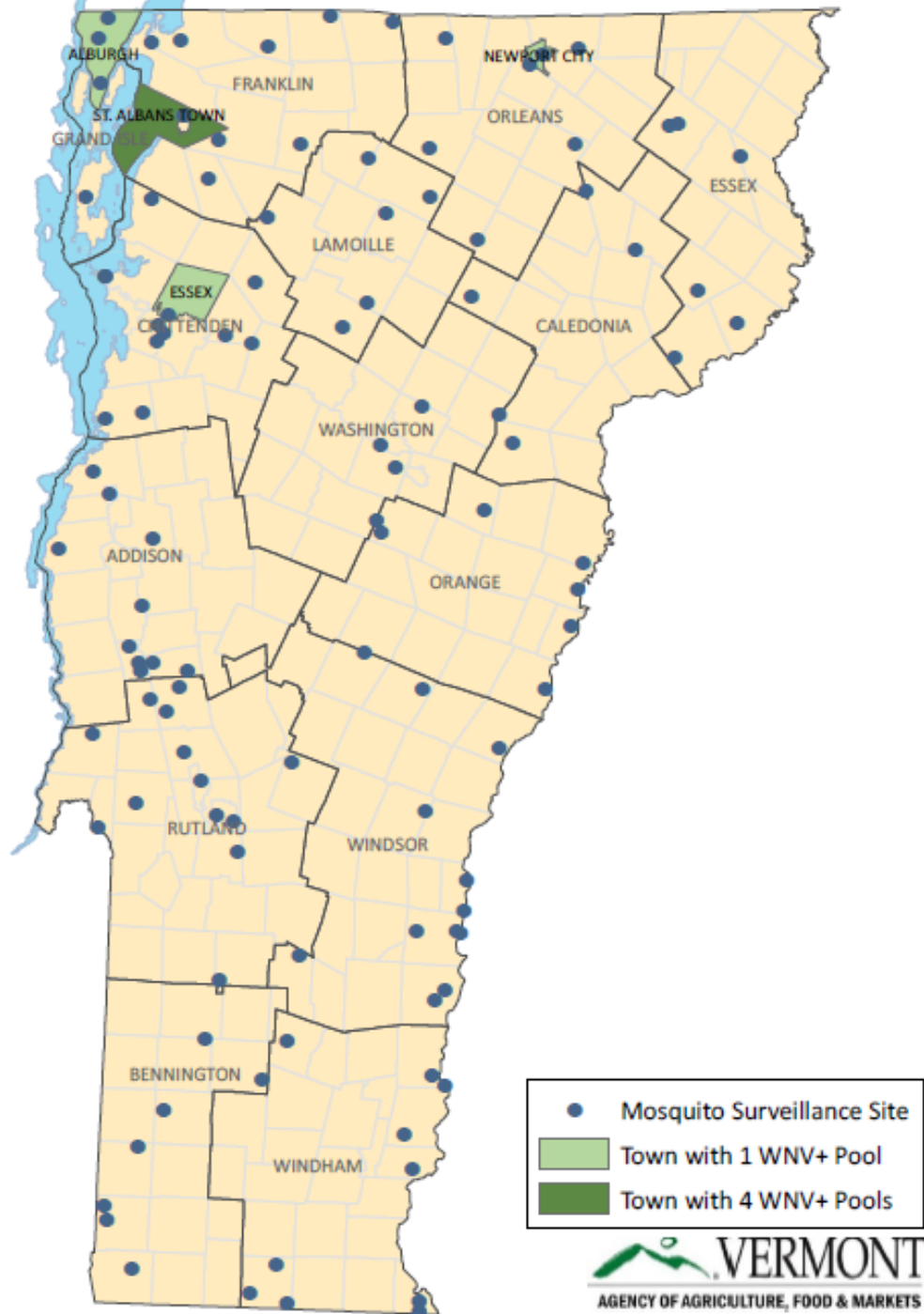


Table 1. 2022 Vermont Arbovirus Testing Results (Vermont Agency of Agriculture)

CDC Week #	Beginning Sunday	Pools Tested	EEE+ Pools	WNV+ Pools
27	3-Jul	164	0	0
28	10-Jul	160	0	0
29	17-Jul	162	0	0
30	24-Jul	162	0	0
31	31-Jul	174	0	0
32	7-Aug	162	0	1
33	14-Aug	121	0	1
34	21-Aug	163	0	2
35	28-Aug	128	0	2
36	4-Sep	116	0	0
37	11-Sep	142	0	0
38	18-Sep	154	0	0
39	25-Sep	131	0	1
40	2-Oct	139	0	0
41	9-Oct	97	0	0
Total		2,175	0	7

Table 2. 2022 Vermont West Nile Virus-Positive Mosquito Pools (Vermont Agency of Agriculture)

Date Collected	Town	County	Genus species
8/9/2022	Alburgh	Grand Isle	<i>Culex pipiens/restuans</i>
8/15/2022	St Albans	Franklin	<i>Culex pipiens/restuans</i>
8/23/2022	Essex	Chittenden	<i>Culex pipiens/restuans</i>
8/25/2022	Newport City	Orleans	<i>Culex pipiens/restuans</i>
8/30/2022	St Albans	Franklin	<i>Culex pipiens/restuans</i>
8/30/2022	St Albans	Franklin	<i>Culex pipiens/restuans</i>
9/27/2022	St Albans	Franklin	<i>Culex pipiens/restuans</i>

Table 3. 2022 Vermont Towns Trapped (n=91) (Vermont Agency of Agriculture)

Town	County
Addison	Addison
Alburgh	Grand Isle
Bakersfield	Franklin
Barton	Orleans
Belvidere	Lamoille
Bennington	Bennington
Benson	Rutland
Berkshire	Franklin
Berlin	Washington
Bolton	Chittenden
Bradford	Orange
Brandon	Rutland
Brighton	Essex
Brookfield	Orange
Burke	Caledonia
Cambridge	Lamoille
Castleton	Rutland
Charlotte	Chittenden
Colchester	Chittenden
Concord	Essex
Cornwall	Addison
Coventry	Orleans
Craftsbury	Orleans
Danby	Rutland
Derby	Orleans
E Montpelier	Washington
Eden	Lamoille
Essex	Chittenden
Fair Haven	Rutland
Fairfax	Franklin
Fairfield	Franklin

Town	County
Fairlee	Orange
Ferdinand	Essex
Ferrisburgh	Addison
Franklin	Franklin
Grand Isle	Grand Isle
Groton	Caledonia
Hardwick	Caledonia
Highgate	Franklin
Hyde Park	Lamoille
Jay	Orleans
Jericho	Chittenden
Killington	Rutland
Leicester	Addison
Londonderry	Windham
Lowell	Orleans
Lunenburg	Essex
Manchester Ctr	Bennington
Marshfield	Washington
Milton	Chittenden
Montpelier	Washington
Morristown	Lamoille
New Haven	Addison
Newbury	Orange
Newport	Orleans
Norwich	Windsor
Orange	Orange
Pittsford	Rutland
Pownal	Bennington
Proctor	Rutland
Putney	Windham
Randolph	Orange

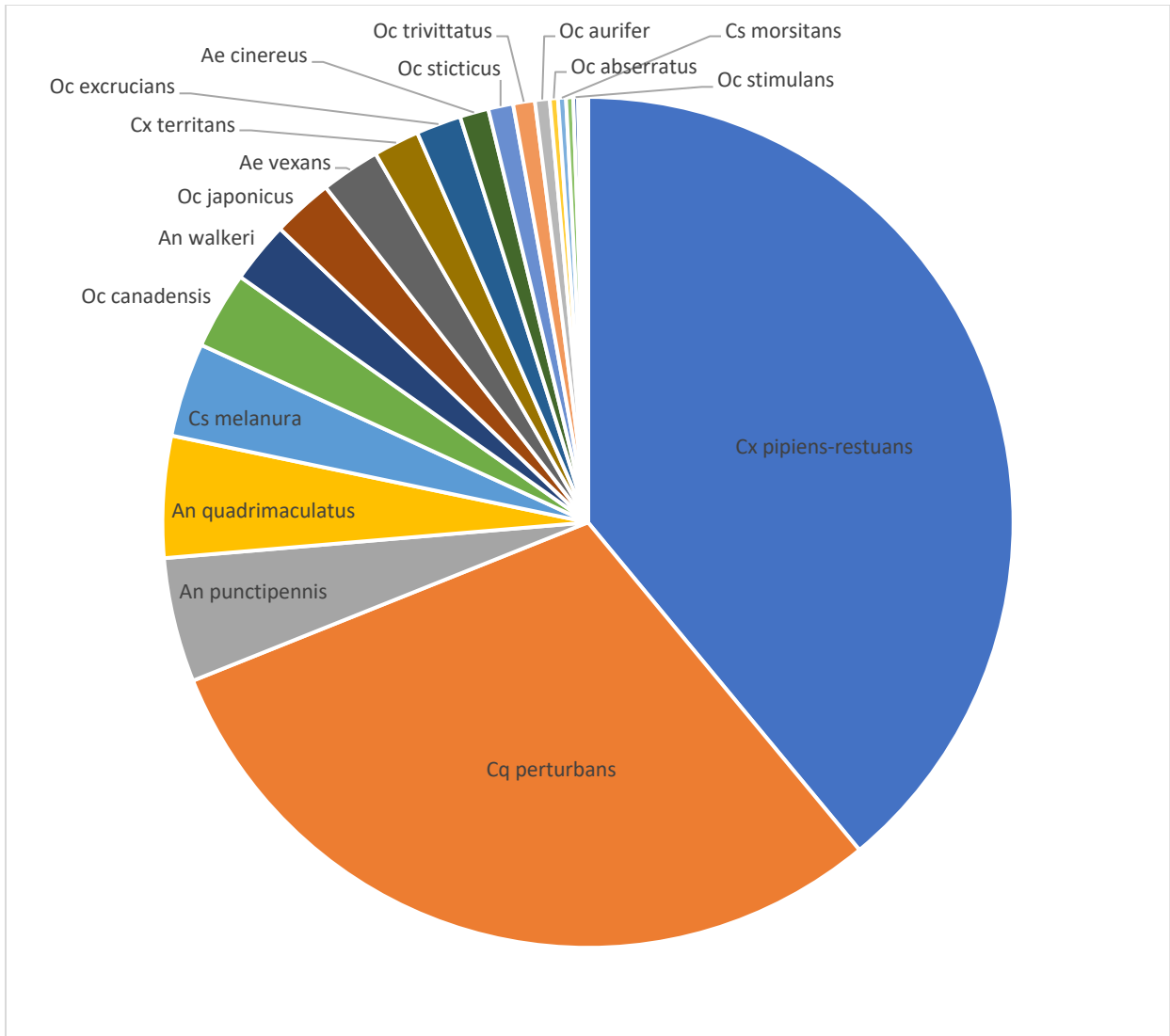
Town	County
Richford	Franklin
Rockingham	Windham
Royalton	Windsor
Rutland	Rutland
S Burlington	Chittenden
Shaftsbury	Bennington
Shrewsbury	Rutland
Springfield	Windsor
St Albans	Franklin
Stowe	Lamoille
Stratton	Windham
Sudbury	Rutland
Sunderland	Bennington
Sutton	Caledonia
Swanton	Franklin
Thetford	Orange
Underhill	Chittenden
Vergennes	Addison
Vernon	Windham
Victory	Essex
Weathersfield	Windsor
Westminster	Windham
Weston	Windsor
Whiting	Addison
Whitingham	Windham
Williamstown	Orange
Williston	Chittenden
Windsor	Windham
Woodstock	Windsor

2022 Vermont Mosquito Species Statistics (Vermont Agency of Agriculture)

Table 4. 2022 Mosquito Species Collected and Tested for WNV and EEE

Species	Number Collected	Collected (% of total)	Number Tested for WNV and EEE	Tested for WNV and EEE (% of total)
<i>Culex pipiens/restuans</i>	24,585	38.99	13,317	46.82
<i>Coquilletidia perturbans</i>	18,880	29.94	5,214	18.33
<i>Anopheles punctipennis</i>	2,981	4.73	1,077	3.79
<i>Anopheles quadrimaculatus</i>	2,910	4.61	2,069	7.27
<i>Culiseta melanura</i>	2,254	3.57	2,254	7.93
<i>Ochlerotatus canadensis</i>	1,854	2.94	1,851	6.51
<i>Anopheles walkeri</i>	1,472	2.33	0	0.00
<i>Ochlerotatus japonicus</i>	1,456	2.31	1,285	4.52
<i>Aedes vexans</i>	1,420	2.25	554	1.95
<i>Culex territans</i>	1,101	1.75	462	1.62
<i>Ochlerotatus excrucians</i>	1,079	1.71	0	0.00
<i>Aedes cinereus</i>	689	1.09	79	0.28
<i>Ochlerotatus sticticus</i>	597	0.95	0	0.00
<i>Ochlerotatus trivittatus</i>	520	0.82	71	0.25
<i>Ochlerotatus aurifer</i>	353	0.56	0	0.00
<i>Ochlerotatus abserratus</i>	194	0.31	0	0.00
<i>Culiseta morsitans</i>	191	0.30	191	0.67
<i>Ochlerotatus triseriatus</i>	173	0.27	0	0.00
<i>Ochlerotatus stimulans</i>	112	0.18	0	0.00
<i>Uranotaenia sapphirina</i>	65	0.10	0	0.00
<i>Psorophora ferox</i>	59	0.09	0	0.00
<i>Ochlerotatus fitchii</i>	26	0.04	0	0.00
<i>Ochlerotatus provocans</i>	22	0.03	0	0.00
<i>Ochlerotatus intrudens</i>	18	0.03	0	0.00
<i>Anopheles earlei</i>	17	0.03	0	0.00
<i>Culiseta minnesotae</i>	16	0.03	16	0.06
<i>Anopheles barberi</i>	3	0.00	0	0.00
<i>Culex salinarius</i>	3	0.00	1	0.00
<i>Ochlerotatus communis</i>	3	0.00	0	0.00
<i>Ochlerotatus atropalpus</i>	2	0.00	0	0.00
<i>Ochlerotatus</i> species	1	0.00	0	0.00
Total	63,056		28,441	

Mosquito species collected in Vermont, 2022 (Vermont Agency of Agriculture)

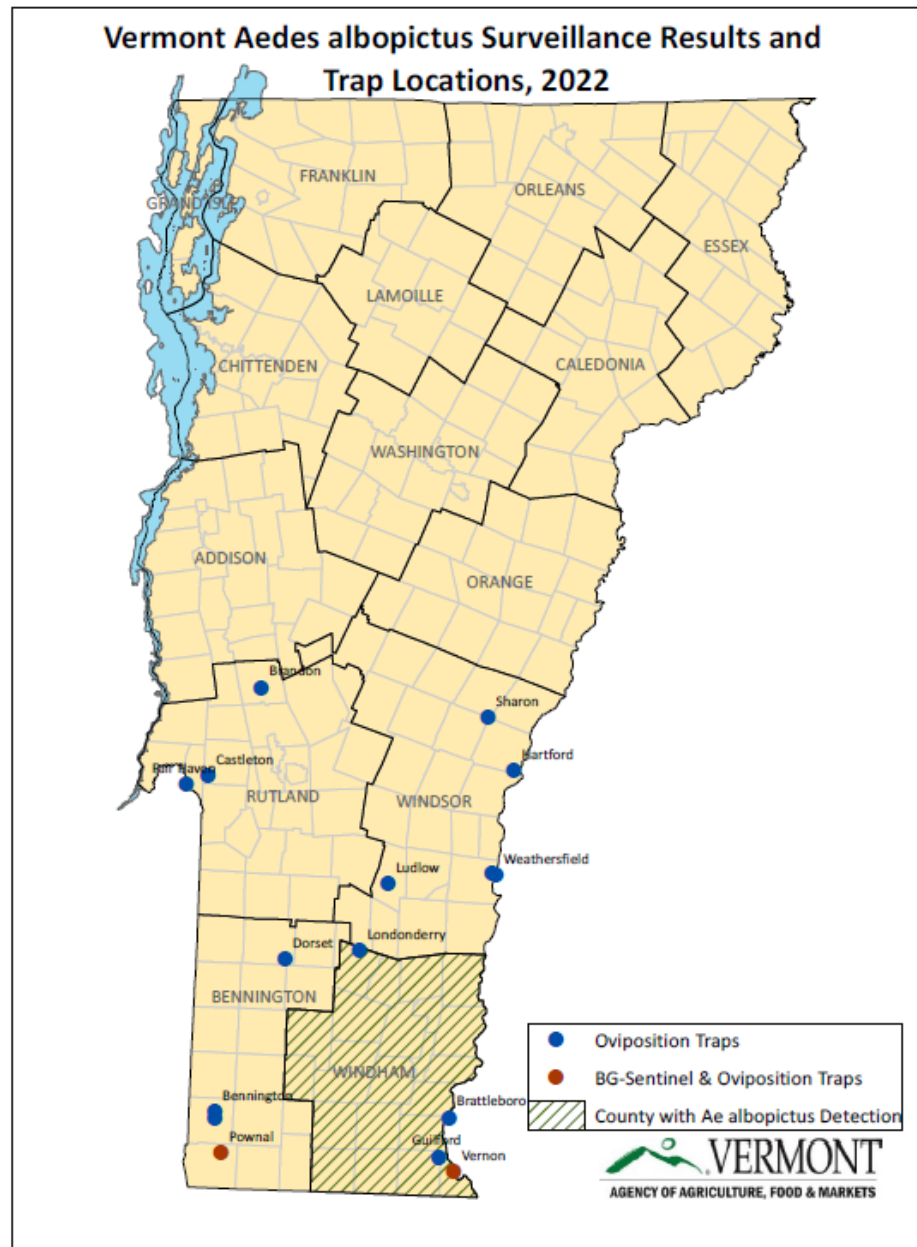


Vermont Agency of Agriculture's Targeted *Aedes albopictus* Surveillance

Aedes albopictus (Asian Tiger Mosquito) is believed to be a potential weak vector of Zika, and a competent vector of dengue, chikungunya, and yellow fever in tropical and subtropical areas where these diseases are endemic. It has an estimated geographic range that includes southern Vermont; however, those diseases are not endemic to our area.

In 2022, 2 BG-Sentinel traps were set for 15 weeks in 2 towns on the Vermont/Massachusetts border. Additionally, 16 oviposition trap locations were surveyed for 10 weeks (June 27 – September 9). Sites were located along major truck routes at rest areas, truck stops, tire dealerships, and transfer stations, as this mosquito species is a container breeder with a preference for tires. Eggs were collected, counted at VAEL, and processed at the Massachusetts Department of Public Health Laboratory for rearing and larval identification.

Aedes albopictus mosquito eggs were found at 1 site in Windham County for 10 consecutive weeks. *Aedes albopictus* had been detected for the first time in Vermont at this Windham County site in 2019.



It appears this species is established in Vermont, having been detected for several weeks consecutively each year over 4 years. The Agency will continue to track the spread of this species.